

### ***REMARKS***

This is a full and timely response to the outstanding non-final Office Action mailed December 14, 2004. Upon entry of the amendments in this response, claims 1, 3, 5 – 10, and 17 – 20 remain pending. Reconsideration and allowance of the application and presently pending claims are respectfully requested. In addition, Applicant does not intend to make any admissions regarding any other statements in the Office Action that are not explicitly referenced in this response.

#### **I. Allowable Subject Matter**

The Office Action indicates that claims 1, 3, and 5 – 10 are allowed. Applicant greatly appreciates the Examiner's indication of allowance.

#### **II. Rejections Under 35 U.S.C. §103**

In order for a claim to be properly rejected under 35 U.S.C. §103, the teachings of the prior art reference must suggest all features of the claimed invention to one of ordinary skill in the art. *See, e.g., In re Dow Chemical*, 837 F.2d 469, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988); *In re Keller*, 642 F.2d 413, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981). Further, “[t]he PTO has the burden under section 103 to establish a prima facie case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.” *In re Fine, Minnesota Mining and Mfg.Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).

A. **Claims 17 – 20 are Patentable Over *Chen* in view of *Pfeil***

1. **Claim 17 is Patentable Over *Chen* in View of *Pfeil***

The Office Action indicates that claim 17 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent number 6,256,383 to Chen (“*Chen*”) in view of U.S. patent no. 5,953,410 to Pfeil (“*Pfeil*”). Applicants respectfully traverse this rejection for at least the reason that *Chen* in view of *Pfeil* fails to disclose, teach, or suggest all of the elements of claim 17.

More specifically, claim 17 recites that:

A digital signal transceiver, comprising:  
a transmitter configured *to receive a locally generated transmit signal*;  
a hybrid electrically coupled to the transmitter configured to receive and inductively couple the transmit signal to a two-wire transmission line, *the hybrid further configured to receive a remotely generated receive signal along the two-wire transmission line*;  
a receiver configured to process the remotely generated receive signal; and  
an echo canceller *disposed in parallel between the transmitter and the receiver* configured to reduce both *short-term echo components* and long-tail echo components of the locally generated transmit signal *wherein the echo canceller calculates coefficient values for less than N taps while emulating a N tap digital filter*.

(*Emphasis added*).

First, the Office Action first alleges that *Chen* teaches a “hybrid electrically coupled to the transmitter configured to receive and inductively couple the transmit signal to a two-wire transmission line, the hybrid further configured to receive a remotely generated receive signal along the two-wire transmission line” (OA p. 3, lines 9 – 12). However, as stated in *Chen* column 5, lines 23 – 26, “[t]he 2 to 4-wire hybrid converter 24 not only passes the signal received *from the distant party via the 4-wire line to the local party via the subscriber 2-wire line*, but also acts as an echo path.” As illustrated in this passage, 2 to 4 hybrid converter 24 does not

receive and inductively couple the transmit signal *to a two-wire transmission line*, as the Office Action alleges. For at least this reason claim 17 is patentable over *Chen*, in view of *Pfeil*.

Secondly, the Office Action states that *Chen* teaches an “echo canceller... configured to reduce *both* short-term echo components and long-tail echo components of the locally generated transmit signal” (OA, p. 3, lines 16 – 18). However, nowhere in *Chen* is there any discussion of this result. As stated in *Chen*’s title “IIR Filter of Adaptive Balance Circuit for Long Tail Echo Cancellation,” there is no mention of reducing short-term echo components. For at least this reason, claim 17 is patentable over *Chen* in view of *Pfeil*.

Additionally, the Office Action states “Chen fails to clearly teach the echo canceller calculates coefficient values for less than N taps while emulating an N tap digital filter. However, *Pfeil* teaches such features (see col. 3, ln 40 – 56) for a purpose of calculating coefficient of the filters” (OA p. 3, beginning last line). In reviewing the passage cited by the Office Action, however, Applicants are unable to ascertain where *Pfeil* discloses the feature “wherein the echo canceller calculates coefficient values for less than N taps while emulating an N tap digital filter.” As a nonlimiting example, in column 3, line 45 – 50, *Pfeil* states “[t]he correlators *consist* respectively of a simple multiplier  $X_0, X_1 \dots X_n$  of a summation circuit formed from a memory ST and a summation unit AD. *Each correlator  $K_0, \dots X_n$  calculates a filter coefficient  $C_0, C_1, \dots C_n$* , by which the transmission signal  $s(t)$  is multiplied in one of the multipliers M...” As illustrated in this passage, *Pfeil* discloses correlators in a 1-to-1 ratio with the coefficients. As such, this statement does not disclose, teach, or suggest the feature of an echo canceller calculating coefficient values for less than N taps while emulating an N tap digital filter. For at least this reason, claim 17 is patentable over the proposed combination of *Chen* in view of *Pfeil*.

**2. Claims 18 – 20 are Patentable over *Chen* in View of *Pfeil***

In addition, dependent claims 18 – 20 are allowable for at least the reason that these claims depend from allowable independent claim 17. *Minnesota Mining and Mfg. Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).

**III. Cited Art Made of Record**

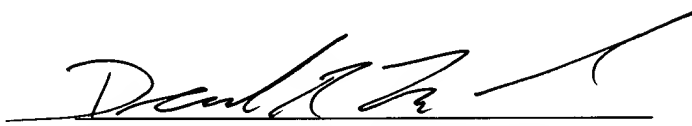
The cited art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.

**CONCLUSION**

In light of the foregoing amendments and for at least the reasons set forth above, Applicants respectfully submit that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that the now pending claims 1, 3, 5 – 10, and 17 – 20 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested.

If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned agent at (770) 933-9500.

Respectfully submitted,



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